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AUSTRALIA

PATENTS ACT 1990

PATENT REQUEST: STANDARD PATENT

We, COPPER REFINERIES PTY LTD, A.C.N. 009 676 975, being the person identified below as the Applicant, request the grant of a patent to the person identified below as the Nominated Person, for an invention described in the accompanying standard complete specification.

Full application details follow.

Applicant: COPPER REFINERIES PTY LTD

Address: Hunter Street, Stuart, Townsville, Queensland 4810, Australia

Nominated Person: AS ABOVE

Address: AS ABOVE

Invention Title: "EDGE STRIP"

Name of actual inventors: WAYNE KEITH WEBB, MARTIN KARL SCHONFELDT and DAMIAN GARY LILLICRAP

Drawing number recommended to accompany the abstract: Figure 1

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DATED this 1st day of December, 1993
COPPER REFINERIES PTY LTD

Below is the signature of the Patent Attorney or Agent for the Applicant

To: The Commissioner of Patents
WODEN ACT 2606

File: 16007

Fee: Previously Paid



AUSTRALIA

PATENTS ACT 1990

PATIENT SUB OFFICE

10 JUL 1991

SYDNEY

NOTICE OF ENTITLEMENT

I, GRANTLEY EDWIN CASLEY, GENERAL MANAGER

of COPPER REFINERIES PTY LTD, HUNTER STREET, STUART QLD 4810 on behalf of the applicant in respect of Application No. 75360/91, state the following:-

The person nominated for the grant of the patent has, for the following reasons, gained entitlement from the actual inventors:

"The nominated person is the assignee of the inventors.

5TH JUNE 1991

(Date)

File: 16007

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AU9175360

(12) PATENT ABRIDGMENT (11) Document No. AU-B-75360/91
(19) AUSTRALIAN PATENT OFFICE (10) Acceptance No. 646450

(54) Title
EDGE STRIP

International Patent Classification(s)
(51)⁵ C25C 007/02 C25D 017/12

(21) Application No. 75360/91 (22) Application Date : 23.04.91

(43) Publication Date : 05.11.92

(44) Publication Date of Accepted Application : 24.02.94

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(56) Prior Art Documents
AU 536945 61144/80 C25C 7/02
US 3830710
US 2536877

(57) Claim

1. A cathode plate edge strip comprising:

a non-inflatable elongate body of a thermoplastic material and including a longitudinal opening on one side of said body to accommodate an edge of the cathode plate; at least one continuous longitudinal internal groove on an inside surface of the opening adapted to engage a formation on a side adjacent an edge of the cathode plate; and

at least one expansion channel on the inside surface of the opening to allow for thermal expansion of the cathode plate.

7. An edge strip according to any one of the preceding claims wherein the internal groove is adapted to engage a plurality of pegs on at least one side adjacent an edge of the cathode plate.

COMMONWEALTH OF AUSTRALIA

646450

FORM 10

PATENTS ACT 1952

COMPLETE SPECIFICATION

FOR OFFICE USE:

Application Number:
Lodged:

Class Int. Class

Complete Specification Lodged:
Accepted:
Published:

Priority:

Related Art:

Name of Applicant:

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Complete Specification for the Invention entitled:

"EDGE STRIP"

The following statement is a full description of this invention,
including the best method of performing it known to us:-

The present invention relates to cathodes, and in particular to an edge strip for a cathode plate.

The use of cathode plates in metal deposition processes, and particularly for copper, is well known.

During the process metal particles are deposited on either side of the cathode plate. During removal the plate is flexed to loosen the material and it is desirable to protect at least the two side edges of the plate so that material does not accumulate around the side edges to inhibit the removal of the metal. One known method of protecting the edge during this process is to coat the edge with a layer of wax. This procedure has been found to be labour intensive, messy and unreliable. Cracks in the wax allow bridging of the metal between the two sides and fresh application of wax is required after each use. It is therefore necessary to have large quantities of wax available for use.

To combat some of these problems an edging strip was developed which was placed around the edge of the plate and attached by way of pins through holes in the plate and the edge strip. However, this process was also highly labour intensive and required skill to locate and line up the corresponding holes in the edge strip and plate.

Bridging also occurred between the hole in the plate and the pin. It has been proposed to utilise an inflatable edge strip which when pressurised would clampingly grip the side walls of the plate. However, that method was found to be ineffective and costly.

It is therefore an object of the present invention to ameliorate at least one of the disadvantages of the prior art by providing an improved edging strip.

According to a first aspect the present invention
5 consists in a cathode plate edge strip comprising:

a non-inflatable elongate body of a thermoplastic material and including a longitudinal opening on one side of said body to accommodate an edge of the cathode plate;

10 at least one continuous longitudinal internal groove on an inside surface of the opening adapted to engage a formation on a side adjacent an edge of the cathode plate; and

15 at least one expansion channel on the inside surface of the opening to allow for thermal expansion of the cathode plate.

Preferably there are two continuous and opposed internal grooves to receive pegs or tabs protruding from a side wall of the cathode plate.

20 In a preferred embodiment the peg is of the same material as the plate and is welded thereto.

Preferably, the formation on the cathode plate is a peg protruding from a side wall of the cathode plate.

Preferably, the peg is inserted through a hole in the cathode plate.



Preferably, the peg is plastic or metal.

Advantageously, the peg is metal and is welded onto the cathode plate.

5 Advantageously, the internal groove is adapted to engage a plurality of formations on at least one side adjacent an edge of the cathode plate.

Preferably, the internal groove is adapted to engage a plurality of pegs on at least one side adjacent an edge of the cathode plate.

10 A further preferred embodiment uses a tab pressed from the plate as the formation. When a plurality of tabs are used either all are one side or alternatively.

15 The present invention has the advantage that as there are no pinning holes there is no possible current path which would allow metal to be deposited on the edge. The positive location of the edge strip along its vertical axis also prevents dislodgement of the strip during mechanical or manual handling.

20 Some preferred embodiments of the present invention will now be described, by way of example only, with reference to the accompanying drawings in which:

Figure 1 is a schematic representation of a plan view of an edge strip according to the invention in combination with a cathode plate;

25 Figure 2 is a plan view of the edge strip of Figure 1 with a variation of the cathode plate; and

Figure 3 is a plan view of the edge strip of Figure 1 and a further variation of the cathode plate.



Referring to the drawings, there is an edge strip 1 attached to the edge of a cathode plate 2. Edge strip 1 is made from any thermoplastic material such as PVC, CPVC, PVC/acrylic co-polymer, and is a generally an elongated extruded body. An opening 4 is formed on one side of strip 1 and is also generally elongate along the longitudinal axis of strip 1, to receive the edge of cathode plate 2. Continuous longitudinal grooves 5 are formed on opposed inside surfaces of opening 4 during the extrusion process. Also formed during the extrusion process are expansion channels 6 which allow for the thermal expansion of cathode 2.

8
6
3
2
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In Figure 1 cathode plate 2 has a hole 7 formed therethrough adjacent the edge. A peg of say plastic or metal is inserted through hole 7. A plurality of such holes and pegs are located down the edge of plate 2 in an orderly manner to form a ridge, the number varying with the size of plate 2.

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In use, edge strip 1 is slid over and down the edge of cathode 2 and over the ridge of formations formed by the pegs 8. Grooves 5 form channels in which pegs 8 are accommodated. This arrangement provides a positive seal against cathode 2 which inhibits ingress of the electrode deposited material under the edge strip. Edge strip 1 may also be removed without damage to permit under edge inspection and cleaning. Furthermore, expansion or contraction of edge 1 will not effect the fastening means and not result in bridging of the metal.

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A further embodiment of the invention is seen in Figure 2 wherein the same edge strip is used over the cathode plate 2 however instead of simply inserting peg 8 through hole 7, a metal peg of the same material as the mother plate is welded into hole 7.

Yet a further embodiment is seen in Figure 3 wherein the formations on plate 2 are tabs punched from the mother plate 2 to one side. A plurality of tabs 9 can be pressed either all to one side or on alternate sides.

Although the invention has been described with reference to specific examples, it will be appreciated by those skilled in the art that the invention may be embodied in many other forms.

THE CLAIMS DEFINING THE INVENTION ARE AS FOLLOWS:-

1. A cathode plate edge strip comprising:
a non-inflatable elongate body of a thermoplastic material and including a longitudinal opening on one side of said body to accommodate an edge of the cathode plate;
at least one continuous longitudinal internal groove on an inside surface of the opening adapted to engage a formation on a side adjacent an edge of the cathode plate;
and
at least one expansion channel on the inside surface of the opening to allow for thermal expansion of the cathode plate.
2. An edge strip according to claim 1 wherein the formation on the cathode plate is a peg protruding from a side wall of the cathode plate.
3. An edge strip according to claim 2 wherein the peg is inserted through a hole in the cathode plate.
4. An edge strip according to claim 2 or 3, wherein the peg is plastic.
5. An edge strip according to claim 2, wherein the peg is metal and is welded onto the cathode plate.
6. An edge strip according to any one of the preceding claims wherein the internal groove is adapted to engage a plurality of formations on at least one side adjacent an edge of the cathode plate.
7. An edge strip according to any one of the preceding claims wherein the internal groove is adapted to engage a plurality of pegs on at least one side adjacent an edge of the cathode plate.



8. An edge strip according to any one of the preceding claims wherein there are two continuous and opposed internal grooves to receive pegs protruding from a side wall of the cathode plate.

9. An edge strip substantially as herein described with reference to the accompanying drawings.

DATED this 9th Day of November, 1993

COPPER REFINERIES PTY LTD

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Fellow Institute of Patent Attorneys of Australia

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